

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application. All pending claims are reproduced below, including those that remain unchanged:

Claims 1-21 (Canceled).

22. (Currently amended) A method of etching an insulating layer in a wafer to present a clean and fresh surface on the insulation layer for a deposition on the insulating layer, including the steps of:

providing a relatively strong electrical field at first positions in an enclosure,

providing a relatively weak electrical field at second positions displaced in the enclosure from the first positions, the relatively weak electrical field defining a capacitor with a high impedance to limit the transfer of electrical charges to the insulating layer in the wafer,

passing molecules of an inert gas through the enclosure, and providing a magnetic field in the enclosure in a direction relative to the strong electrical field to obtain a movement of electrons in the enclosure at the positions of the strong electrical field and an ionization of molecules of the inert gas by the electrons and a movement of the ions in a direction relative to the weak electrical field to obtain a movement of the ions, in accordance with the high impedance of the capacitor defined by the relatively weak field, to the second electrode at a speed for etching the surface of the insulating layer on the wafer substantially uniformly without pitting the insulating layer, wherein

the capacitor constitutes a first capacitor and wherein

the relatively weak electrical field is defined by the first capacitor and a second capacitor in a series circuit and wherein

the first capacitor is defined by plates constituting an electrode and the wafer and in which the plates are separated by a space in which molecules and

ions of the inert gas are disposed to define the insulator for the capacitor
and to provide the first capacitor with the high impedance and wherein
a second capacitor is defined by plates constituting the wafer and the ions of
the inert gas in the enclosure and wherein the plates are separated by the
insulating layer in the wafer to define the insulator of the second capacitor
and to provide the second capacitor with a relatively low impedance in
comparison to the high impedance of the first capacitor.

23. (Original) A method as set forth in claim 22 wherein

the relatively strong electrical field is provided in a first direction and
the relatively weak electrical field is provided in a second direction opposite
to the first direction and wherein
the magnetic field is provided in a direction transverse to the first and second
directions to produce a movement of the electrons in the enclosure in a
helical path for facilitating the ionization of molecules of the inert gas in
the enclosure,

24. (Original) A method as set forth in claim 22

the wafer is disposed in the weak electrical field and wherein
the molecules of the inert gas are passed through the enclosure initially to
positions in the strong electrical field to obtain an ionization of molecules
of the inert gas and subsequently through the enclosure to positions in the
weak electrical field to facilitate an etching of the surface of the insulating
layer on the wafer by the ions.

25. (Original) A method as set forth in claim 22 wherein

the wafer is disposed in the relatively weak electrical field and wherein
an electrode providing the relatively weak field is spaced from, but disposed
relatively close to, the wafer to cooperate with the wafer in providing a
high impedance in the capacitor and a circuit including the capacitor for
attracting the ions in the weak electrical field to the wafer to etch the

surface of the insulating layer on the wafer without pitting the insulating layer.

26. Canceled.

27. (Currently amended) A method as set forth in claim [[26]] 22 wherein
the relatively strong electrical field is provided by a first electrode and a first
alternating voltage providing a relatively high negative bias on the first
electrode and wherein

the relatively weak electrical field is provided by a second electrode and by a
second alternating voltage providing a relatively low bias on the second
electrode.

28. (Currently amended) A method as set forth in claim [[26]] 22 wherein
the wafer is disposed in the weak electrical field and wherein
the molecules of the inert gas are passed through the enclosure initially
through positions in the strong electrical field to obtain an ionization of
molecules of the inert gas and subsequently through positions in the weak
electrical field to facilitate an etching of the surface of the insulating layer
on the wafer by the ions and wherein
~~the wafer is disposed in the relatively weak electrical field and wherein~~
an electrode providing the relatively weak field is spaced from, but disposed
relatively close to, the wafer to cooperate with the wafer in providing a
high impedance in the capacitor and a circuit including the capacitor for
attracting the ions in the weak electrical field to the wafer to etch the
surface of the insulating layer on the wafer without pitting the insulating
layer.

29. Canceled.

30. (Currently amended) A method of etching an insulating layer on a wafer to
present a clean and fresh surface on the insulating layer for deposition, including
the steps of

passing molecules of an inert gas through an enclosure,
disposing a first electrode in the enclosure to provide a strong electrical field
in a first direction at first positions in the enclosure to ionize molecules of
the inert gas in the enclosure,
disposing a second electrode in the enclosure to provide a weak electrical field
at second positions in the enclosure in a second direction opposite to the
first direction,
providing a magnetic field in the enclosure, in a direction transverse to the
first and second directions, to cooperate with the strong electrical field in
producing charged particles in the enclosure and to cooperate with the
weak electrical field in producing a transfer of the charged particles to the
surface of the insulating layer in the wafer to provide a weak and
controlled etching of the surface of the insulating layer without producing
pits in the surface of the insulating layer, wherein

the second electrode and the wafer constitute plates of a first capacitor and
ions and molecules of the inert gas constitute the dielectric of the first
capacitor and wherein

the wafer and the ions of the inert gas constitutes plates of a second capacitor
and wherein the insulating layer of the wafer constitute the dielectric of
the second capacitor and wherein

the first capacitor has a higher impedance than the second capacitor.

31. (Original) A method as set forth in claim 30 wherein

the molecules of the inert gas pass through the enclosure from the strong
electrical field to the weak electrical field and wherein

the magnetic field is substantially perpendicular to the first and second
electrical fields.

32. (Original) In a combination in claim 30 wherein

the strong electrical field is defined in part by the first electrode and by an alternating voltage applied at a first magnitude to the first electrode to bias the first electrode at a negative DC potential with a first magnitude and wherein

the weak electrical field is defined in part by the second electrode and by an alternating voltage applied to the second electrode at a second magnitude less than the first magnitude to bias the second electrode at a negative DC potential with a second magnitude less than the first magnitude for producing the transfer of the charged particles to the surface of the wafer to provide the weak and controlled etching of the surface of the insulating layer without producing pits in the surface of the insulating layer.

33. (Original) In a combination as set forth in claim 30 wherein

the magnetic field is provided by magnetic members and wherein
the magnetic members and the first and second electrodes define the enclosure.

34. (Original) In a combination as set forth in claim 30 wherein

the wafer is disposed in the weak electrical field and is separated from the second electrode in the weak electrical field.

35. (Original) In a combination as set forth in claim 30 wherein

the magnetic field is substantially perpendicular to the strong and weak electrical fields and wherein
the molecules of the inert gas pass into the enclosure through the strong magnetic field and the molecules and the ions of the inert gas pass from the enclosure through the weak electrical field.

36-42 Canceled.